

WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

May 23, 2012

TO: Internal File

FROM: April A. Abate, Environmental Scientist III/Hydrogeologist *AAA 5/29/2012*

THRU: Steve Christensen, Permit Supervisor *SC for*

SUBJECT: 2011 4th Quarter Water Monitoring, Bear Canyon Mine, C/015/0025,
Task ID #3956

The monitoring plan is described on pages 7-48 through 7-60A of the MRP. It includes Tables 7-12 through 7-17. The mine is now operating under a permit held by Castle Valley Mining, LLC.

1. Were data submitted for all of the MRP required sites?

In-mine

YES ☒ NO ☐

A total of two in-mine samples are listed in the Bear Canyon water monitoring plan: SBC-9A and SCC-3. The Mohrland Portal, sample SCC-3 is sampled for field parameters only in May, August and October of each year. The Hiawatha Seam sample, SBC-9A is sampled for operational parameters in February, May, August, and October (quarterly). SCC-3 - Mohrland Portal sample was sampled for field parameters in December 15, 2011. In-mine sample SBC-9A was sampled on December 9, 2011 for operational parameters. According to Table 7-14 of the Bear Canyon Mining and Reclamation Plan (MRP), in-mine sampling is supposed to be conducted in October, not December.

Springs

YES ☒ NO ☐

Most of the spring samples in and around the Bear Canyon mine are sampled for field, or either operational or expanded list parameters once every five years prior to permit renewal. Active springs requiring operational parameter sampling during the months of February, May, August, and October include: SBC-4 Big Bear Springs, SBC-5-Birch Spring, SBC-17 (16-7-24-4). SBC-14 requires operational monitoring in May, August and October only. Currently active springs requiring field parameter only measurements during the months of May, August and October include: SBC-15, SBC-16, SBC-16A, SBC-16B.

During the 4th quarter, the required springs SBC-4, SBC-5, and SBC-17 were monitored during the month of December for the required operational parameters. SBC-15 and SB-16B were monitored for field parameters. Spring samples SBC-16, 16A reported no flow this quarter. According to Table 7-14 of the MRP, spring sampling is supposed to be conducted in October, not December.

Streams

YES ☒ NO ☐

Active stream samples required for quarterly operational monitoring include: BC-1, BC-2, BC-3, BC-4, CK-1, CK-2. Bear Creek is the principal drainage that runs through the active mining area. BC-2 is the downstream surface water sample from the mine facilities area. CK-1 and CK-2 are the upstream and downstream locations for Cedar Creek located just outside the northeast portion of the permit boundary.

Stream location FC-1 is sampled for field parameters only during the months of May, August and October. Flow was reported at BC-1, BC-2, and CK-2. All other stream sites were no flow. CK-1 was reported as inaccessible due to snow and ice. According to Table 7-14 of the MRP, stream sampling is supposed to be conducted in October, not December.

UPDES

YES ☒ NO ☐

Five stations are monitored for the Bear Canyon UPDES permit on a monthly basis: Sediment Pond A (Outfall ID 002), Sediment Pond B (Outfall 003), Mine Water Overflow discharge to Bear Creek (Outfall 004), Sediment Pond C (Outfall 005), Sediment Pond D (Outfall 007). None of these stations reported any monthly flow data from the five stations during the 4th quarter of 2011 with the exception was discharge point UTG040006-004 - Mine Water to Bear Canyon Creek, which reported monthly discharges during the 4th quarter of 2011. Flow from this point averaged this quarter at 17 gallons per minute (gpm) and TDS concentrations averaged 1,461 mg/L. The Bear Canyon UPDES permit requires that if one outfall cannot meet the 30-day average of 500 mg/L at a discharge point then the sum of all permitted outfalls must meet 2,000 lbs per day limit. The Permittee is meeting their required TDS permit loading limits of under 2,000 lbs/day during the 4th quarter.

Wells

YES ☒ NO ☐

Three wells are monitored at the mine. SBC-3 (Creek Well) is monitored for operational parameters on a quarterly basis. MW-114 and MW-117 are gauged for depth to water level only during the 3rd and 4th quarters. All wells were monitored for the required parameters during this quarter. According to Table 7-14 of the MRP, monitoring well sampling is supposed to be conducted in October, not December.

2. **Were all required parameters reported for each site?**

In-mine YES ☒ NO ☐

Springs YES ☐ NO ☒

SBC-14 did not report a complete parameter dataset. Required operational parameters include: total and dissolved iron, total and dissolved manganese flow, pH, and specific conductivity were required but only water temperature was reported.

Streams YES ☒ NO ☐

UPDES YES ☒ NO ☐

3. Were any irregularities found in the data?

In-mine YES ☒ NO ☐

Temperature was reported below normal at 6.9 deg C outside of 3.52 standard deviations. Water temperature from the Mohrland portal typically ranges from 11 - 12 C. In the 3rd quarter of 2011, the temperature was also recorded at below normal levels at 8.5 deg C.

Springs YES ☐ NO ☒

Streams YES ☐ NO ☒

All stream samples for total dissolved solids detections during this quarter were well below the state water quality standards of 1,200 mg/L. Total iron concentrations at all stream locations were reported below a concentration of 1.0 mg/L.

UPDES YES ☒ NO ☐

Mine water from Bear Canyon Creek at Outfall 004 was the only point that discharged this quarter. Mine water has been consistently discharging from this location since May 2009. Temperature averaged approximately 11 Deg C. and conductivity averaged approximately 1,614 umhos/cm. TDS values averaged 1,477 mg/L. TDS was listed as being outside of 2.56 standard deviations. Conductivity values ranged outside of 2.18-2.25 standard deviations.

Wells YES ☐ NO ☒

4. On what date does the MRP require a five-year resampling of baseline water data?

Baseline parameters are to be taken in August of year 5 prior to each permit renewal. The parameters are referred to as the "Expanded List" in Tables 7-13 and 7-17 of the MRP. The next permit renewal date is November 02, 2015.

5. Based on your review, what further actions, if any, do you recommend?

- Fourth quarter sampling activities were performed in December 2011. According to timetable the MRP, sampling is required in the month of October. Typically, operational parameters are collected in the month of October when low flow conditions are optimal and there is no influence from snow and ice melt. Failure to collect samples in accordance with the MRP Table 7-14 has resulted in Notice of Violation #10096.
- A complete set of operational parameters for spring sample SBC-14 were missing. In accordance with R645-301-731.223 all analytical results of all samples must be provided to DOGM every three months.
- The September 27, 2011 joint inspection between the Utah Department of Water Quality (DEQ) and DOGM indicated that high turbidity was observed in the surface waters in and around the mine. The inspection concluded that all surface water samples should be analyzed for additional parameters including dissolved oxygen. The Division also recommends sampling for the dissolved oxygen parameter for surface water samples (see Table 3 – of Technical Directive 004 – Water Monitoring Programs for Coal Mines, June 2006). Please submit an amendment to include dissolved oxygen to the operational surface monitoring plan on Table 7-17 in the MRP.

6. Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements? YES ☒ NO ☐

Please submit the complete set of operational parameters from spring sample SBC-14 if they were collected.

7. Follow-up from last quarter, if necessary.

Please follow up with the Division if additional assistance is needed in the formal submittal to include the dissolved oxygen parameter to the water monitoring plan.